



**January/February 2005**

Published by the Community Relations Office  
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Upton, NY 11973  
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[www.bnl.gov](http://www.bnl.gov)

## Brookhaven Celebrates 2005 – The World Year of Physics



- The World Year of Physics marks the 100th anniversary of Albert Einstein's "miracle year" when he published several ideas that changed the way we understand the universe. These ideas eventually became the groundwork for modern physics.
- Brookhaven joins the U. S. Department of Energy's Office of Science and other DOE national laboratories and researchers at universities nationwide in celebrating the World Year of Physics through a yearlong program of activities highlighting how physics enables advances in the sciences, and how it contributes to our quality of life.
- Many important discoveries in physics have been made at the Lab, including five that were recognized with Nobel Prizes. A large number of applications also have resulted from physics research, including those in nuclear medical diagnostics.
- Will 2005 be like 1905? You can explore the possibilities of this happening as you celebrate the World Year of Physics by watching it unfold through the eyes of the physicists at Quantum Diaries, a web site that follows a physicist from the Lab and others from around the world as they experience the World Year of Physics, at <http://interactions.org/quantumdiaries/physicists/>.

## New Technique for Tracking Gene Regulations

- Finding out where gene-regulator proteins bind to DNA, and identifying the genes they regulate just got a step easier thanks to a new technique developed by scientists at Brookhaven.
- Together with collaborators from Oregon Health & Science University, Emory School of Medicine, and Stony Brook University, the scientists published the first results using their technique, where they describe the human-genome binding sites of a regulator protein.
- This technique could greatly speed the process of unraveling the role these proteins play in turning on and off the genes that establish the very identity of cells, such as brain, liver, or blood cells, as well as help to explain what might go awry in certain conditions like cancer.
- Though scientists now have decoded almost all of the entire human genome, they are just beginning to decipher it. It's as if they have a giant book of life, but they are barely beginning to learn how to read it.
- This innovative technique gives scientists a new way to index the code, and to find the places where regulators act, that is, where the on/off switches are that determine which genes are at work in different types of cells under different conditions.

(over)



Doon Gibbs, Brookhaven's Associate Laboratory Director for Basic Energy Sciences, with Ward Melville High School team captain Neal Wadhwa, holding the team's trophy. Looking on from the left: team coach Bob Spira, team members Harley Zhang, Charles Cimet, Shira Mitchell, and Sam Ocko; and Cathy Osiecki and Ken White from the Laboratory's Office of Educational Programs.

## Ward Melville High School Wins Science Bowl

- For the second year in a row, the Ward Melville High School team won the Regional Science Bowl championship at the Department of Energy's Brookhaven National Laboratory.
- The team received a \$500 gift certificate and its members will get the chance to participate in the National Science Bowl that will be held in Chevy Chase, Maryland, from April 28 to May 2, 2005.
- Sponsored by Brookhaven Science Associates, the fast-paced question and answer tournament was designed to test high school students' knowledge of biology, chemistry, physics, mathematics, astronomy, earth science, and general science.
- Twenty schools from Long Island and the New York metropolitan area participated this year. Second-place honors went to the Half Hollow Hills West High School team; Horace Greeley High School placed third; and Longwood High School took fourth-place.

## Laboratory Added More Than \$26 Million to the Long Island Economy in 2004

- The Laboratory purchased \$26.7 million worth of supplies and services from Long Island businesses in fiscal year 2004, from October 1, 2003 to September 30, 2004.
- Goods and services are bought from many Long Island vendors, and most of the Lab's approximately 2,700 employees live in Suffolk County and do most of their shopping on Long Island.
- Employees' salaries, wages, and fringe benefits account for 61 percent, or about \$279 million of the Lab's total annual budget of \$454 million.